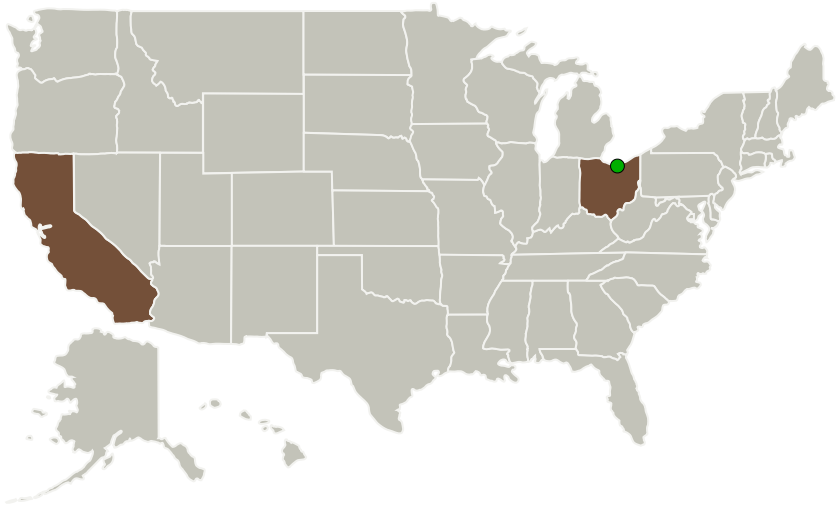
Shape Memory Alloy-Based Periodic Cellular Structures, Phase II

Completed Technology Project (2011 - 2014)

Project Introduction

This SBIR Phase II effort will continue to develop and demonstrate an innovative shape memory alloy (SMA) periodic cellular structural technology. Periodic cellular structures (PCS) will be designed and tailored to determine if additional shape memory performance benefits can be derived from the underlying macro-structure when fabricated from SMA's. These structures will be manufactured using an advanced reactive metal casting technology that will allow complex-shaped, integral bulk structures to be fabricated with the requisite composition-microstructure-properties needed for shape memory performance. Casting also offers a relatively low-cost approach for fabricating near net-shape components. The fabricated SMA structures will be characterized for resulting microstructure-properties in order to determine how to best design such PCS to better exploit SMA's for use in aerospace applications.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Transition45 Technologies, Inc.	Lead Organization	Industry Small Disadvantaged Business (SDB)	Orange, California
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio

Primary U.S. Work Locations	
California	Ohio

Project Transitions

June 2011: Project Start

March 2014: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/139323)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Transition45 Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Edward Chen

Co-Investigator:

Edward Y Chen

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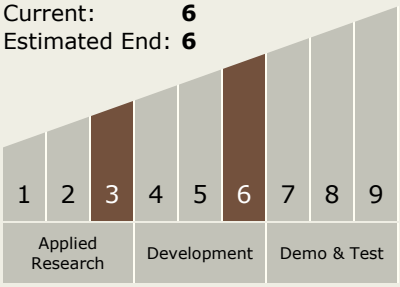
Technology Maturity (TRL)

Start: **3**
Current: **6**
Estimated End: **6**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.8 Smart Materials

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System